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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/050,743	01/16/2002	Jay T. Scheuer	V0077/7219 WRM	7715

7590

09/16/2003

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EXAMINER

HASHMI, ZIA R

ART UNIT PAPER NUMBER

2881

DATE MAILED: 09/16/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/050,743

Applicant(s)

SCHEUER ET AL.

Examiner

Zia R. Hashmi

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 June 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-19 and 23-25 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-19 and 23-25 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 16 January 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 5,7,8.
- 4) ☒ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

1. Applicant's response to Restriction Requirement (Paper No.10) was received on June 16, 2003. All claims from 1-25 have been examined, as requested.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-25 are rejected under U.S.C. 103(a) as being unpatentable over Tepman et al. (5,883,017), in view of Sullivan et al. (6,528,804).

4. With respect to independent claims 1, 16, 20, and 23, Tepman et al. disclose method and apparatus of a process chamber for semiconductor wafers that defines a target chamber (Abstract, lines 1-5 and col. 1, lines 12-14), the processing chamber divider which divides the target chamber, and the divider having an aperture therethrough sized to permit passage of particles or ions, without substantial blockage and limit backflow of the gas in another region of the chamber (col. 4, lines 33-42 & 62-64, col. 6, lines 9-11, col. 14, claims 1 & 2, col. 15, claims 5 & 22, and 12, 14, and 16 in Fig. 1). The method prevents contact between the cleaning material and the surfaces of the non-process compartment and expose the wafer within the first compartment for processing (col. 4, lines 47-51 & 62-64), the target chamber being adapted for enclosing a target having a mask (col. 1, lines 22-31).

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5. With respect to dependent claims 7, 10, and 13, Tepman et al. disclose a semiconductor processing apparatus wherein the aperture adjustment mechanism comprises one or more rotatable panels or plates (col. 3, lines 35-42), their apparatus comprises a vacuum pump for maintaining pressure within the target chamber at a very low pressure (col. 7, lines 19-23), and two or more dividers or compartments disposed in the chamber (Abstract, lines 1-6 and col. 8, lines 6-8).

6. With respect to claims 2-6, 8-9, 11-12, 14-15, 17-19, and 21-25, Tepman et al. fail to disclose a charged particle beam apparatus for ion implantation coupled to a mass analyzer, an accelerator and a scanner, or an ion current measuring system. Sullivan et al, however, disclose a charged particle beam apparatus comprising a charged particle beam source for directing the beam along a beam path in a downstream direction to a target for ion implantation (Abstract, lines 1-5, col. 2, lines 16-20 & 25-26, col. 3, lines 3-5, and 20, 44, & 50 in Fig. 1), comprising an ion source for directing an ion beam along a beam path toward a target (Abstract, lines 4-5, col. 3, line 5, and 12 in Fig. 1); a mass analyzer disposed along the beam path for selecting ions in the ion beam (col. 3, line 12 and 30 in Fig. 1); an accelerator disposed along the beam path for accelerating the selected ions in the ion beam to desired energies (col. 3, lines 16-17, col. 6, claims 1 & 11, and 40 in Fig. 1); a scanner for distributing the ion beam over the target (col. 3, lines 3-22 and 42 in Fig. 1), and means of measuring ion dosage (col. 2, lines 33-36 and 40-42).

It would have been obvious to one having ordinary skill in the art at the time of the invention was made to combine methods and apparatus of Tepman and Sullivan et

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al., and add features like variable aperture mechanism responsive to a beam sensor signals, or having separate vacuum pumps for each divider in the target chamber, because Sullivan et al. teach (col. 1, lines 39-42) that a well-known trend in the semiconductor industry is toward smaller, higher speed devices, and in particular, decreasing lateral and depth dimensions in semiconductor devices.

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Chu et al. disclose (Pub. No. US 2001/0046566) an ion implanter with target chamber divided into two parts.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Zia Hashmi whose telephone number is (703) 305-0419. The examiner can normally be reached between 8.30 AM- 5 PM. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John R. Lee can be reached on (703) 308-4116.

Zia Hashmi

August 24, 2003.


JOHN R. LEE
SUPERVISORY PATENT EXAMINER
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